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states:(51) Int'l. Cl.: **H01L 21/28 H01L 21/205 H01L 21/285**(71) Applicant: **HITACHI LTD**(72) Inventor: **KOBAYASHI TAKASHI
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**(54) FORMATION OF THIN
FILM**

(57) Abstract:

PURPOSE: To contrive the reduction of the resistance of wirings by using a mixed gas as a material gas which includes disilane or trisilane and arsine.

CONSTITUTION: For a material gas, a mixed gas including Si₂H₆ or Si₃H₈ and AsH₃ is used and an Si film is formed under a film forming temperature of 450°C-550°C. After

that, the film is made into a polycrystalline film by heat treatment. This is a polycrystalline silicon film which includes crystal particles whose diameter is 10 times its film thickness or larger and whose surface has unevenness of 5nm or less, and also includes arsenic. As a result, such Si film can be formed that realizes high productivity and conductivity and allows little impurity diffusion into a substrate Si.

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